CLAIMS

What is claimed is:

1   1.   In a network device for configuring a virtual private network (VPN), a method

2   comprising:

3   receiving management traffic over the VPN; and

4   managing the network device using the management traffic received over the

5   VPN.

1   2.   The method of claim 1, wherein the managing the network device includes

2   managing the network device using a secure in-band management configuration.

1   3.   The method of claim 1, further comprising:

2   linking one or more management ports of the network device with the VPN.

1   4.   The method of claim 1, further comprising:

2   linking a management function internal to the network device with the VPN.

1   5.   The method of claim 1, further comprising:

2   performing Internet Protocol (IP) services or Multiprotocol Label Switching

3   (MPLS) services.

1   6.   A network device comprising:

2   a plurality of input and output data links;

3   a routing and forwarding module to route and to forward data on the input and

4   output data links, to configure a virtual private network (VPN), and to receive

5   management traffic over the VPN; and

6   a management module to receive the management traffic from the VPN and to

7   manage the network device using the management traffic.

1   7.   The network device of claim 6, wherein the management module is to use a

2   secure in-band management configuration.

1   8.   The network device of claim 6, further comprising:

2   one or more management ports; and

3   a link to link the management ports with the VPN.

1   9.   The network device of claim 6, further comprising:

2   a link to link an internal management function with the VPN.

1   10.   The network device of claim 6, wherein the routing and forwarding module is to

2   perform Internet Protocol (IP) services or Multiprotocol Label Switching (MPLS)

3   services.

1   11.   A method for a network device comprising:

2   configuring the network device to support a virtual private network (VPN); and

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3   linking a management device or a management function with the VPN.

1   12.   The method of claim 11, further comprising:

2   carrying management traffic for the network device using the VPN.

1   13.   The method of claim 12, further comprising:

2   managing the network device using the management traffic carried on the VPN.

1   14.   The method of claim 11, further comprising:

2   linking the VPN to the management device using an external link or linking the

3   VPN to the management function using an internal link.

1   15.   The method of claim 11, further comprising:

2   performing Internet Protocol (IP) services or Multiprotocol Label Switching

3   (MPLS) services.

1   16.   A network device comprising:

2   a routing and forwarding module to route and forward packets for the network

3   device and to configure the network device to support a virtual private network (VPN);

4   and

5   a link to link a management device or a management function with the VPN.

1   17.   The network device of claim 16, wherein the routing and forwarding module is

2   to deliver management traffic on the VPN for the network device.

1   18.   The network device of claim 17, further comprising:

2   a management module to manage the network device using the management

3   traffic delivered on the VPN.

1   19.   The network device of claim 16, further comprising:

2   an external link to link the VPN to the management device

1   20.   The network device of claim 16, further comprising:

2   an internal link to link the VPN to the management function internal to the

3   network device.

1   21.   The network device of claim 16, wherein the routing and forwarding module is

2   to perform Internet Protocol (IP) services or Multiprotocol Label Switching (MPLS)

3   services.

1   22.   A network device for configuring a virtual private network (VPN) comprising:

2   means for receiving management traffic over the VPN; and

3   means for managing the network device using the management traffic received

4   over the VPN.

1   23.   The network device of claim 22, wherein the means for managing comprises

2   means for managing the network device using a secure in-band management

3   configuration.

1　24.　The network device of claim 22, further comprising:

2　　　　means for linking one or more management ports of the network device with the

3　VPN.

1　25.　The network device of claim 22, further comprising:

2　　　　means for linking a management function internal to the network device with the

3　VPN.

1　26.　The network device of claim 22, further comprising:

2　　　　means for performing Internet Protocol (IP) services or Multiprotocol Label

3　Switching (MPLS) services.

1　27.　A network device comprising:

2　　　　means for configuring the network device to support a virtual private network

3　(VPN); and

4　　　　means for linking a management device or a management function with the

5　VPN.

1　28.　The network device of claim 27, further comprising:

2　　　　means for carrying management traffic for the network device using the VPN.

1　29.　The network device of claim 28, further comprising:

2　　　　means for managing the network device using the management traffic carried on

3　the VPN.

1   30.   The network device of claim 27, further comprising:

2   means for linking the VPN to the management device using an external link or

3   linking the VPN to the management function using an internal link.

1   31.   The network device of claim 27, further comprising:

2   means for performing Internet Protocol (IP) services or Multiprotocol Label

3   Switching (MPLS) services.

1   32.   A machine-readable medium providing instructions, which if executed by a

2   processor, cause the processor to perform an operation comprising:

3   configuring a network device to support a virtual private network (VPN);

4   receiving management traffic over the VPN; and

5   managing the network device using the management traffic received over the

6   VPN.

1   33.   The machine-readable medium of claim 32, further providing instructions,

2   which if executed by the processor, cause the processor to perform an operation

3   comprising:

4   managing the network device using a secure in-band management configuration.

1   34.   The machine-readable medium of claim 32, further providing instructions,

2   which if executed by the processor, cause the processor to perform an operation

3   comprising:

4   linking one or more management ports of the network device with the VPN.

1 35. The machine-readable medium of claim 32, further providing instructions,

2 which if executed by the processor, cause the processor to perform an operation

3 comprising:

4   linking a management function internal to the network device with the VPN.

1 36. The machine-readable medium of claim 32, further providing instructions,

2 which if executed by the processor, cause the processor to perform an operation

3 comprising:

4   performing Internet Protocol (IP) services or Multiprotocol Label Switching

5 (MPLS) services.

1 37. A machine-readable medium providing instructions, which if executed by a

2 processor, cause the processor to perform an operation comprising:

3   configuring a network device to support a virtual private network (VPN); and

4   linking a management device or a management function with the VPN.

1 38. The machine-readable medium of claim 37, further providing instructions,

2 which if executed by the processor, cause the processor to perform an operation

3 comprising:

4   carrying management traffic for the network device using the VPN.

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1   39.   The machine-readable medium of claim 38, further providing instructions,

2   which if executed by the processor, cause the processor to perform an operation

3   comprising:

4   managing the network device using the management traffic carried on the VPN.

1   40.   The machine-readable medium of claim 38, further providing instructions,

2   which if executed by the processor, cause the processor to perform an operation

3   comprising:

4   linking the VPN to the management device using an external link or linking the

5   VPN to the management function using an internal link.

1   41.   The machine-readable medium of claim 38, further providing instructions,

2   which if executed by the processor, cause the processor to perform an operation

3   comprising:

4   performing Internet Protocol (IP) services or Multiprotocol Label Switching

5   (MPLS) services.

1   42.   A system comprising:

2   one or more network devices to configure a virtual private network (VPN); and

3   one or more links to link the VPN with at least one management device, the

4   management device to facilitate management of the network devices by sending

5   management traffic to the network devices via the links and VPN.

1   43.   The system of claim 42, wherein the management device is to manage the

2   network devices using a secure in-band management configuration.

1   44.   The system of claim 42, wherein the network devices include one or more

2   management ports to couple with the VPN.

1   45.   The system of claim 42, wherein the network devices include an internal

2   management function to link with the VPN.

1   46.   The system of claim 42, wherein the network devices are to perform Internet

2   Protocol (IP) services or Multiprotocol Label Switching (MPLS) services.